REMARKS/ARGUMENTS

Claims 63-82 remain in the application unamended; claims 62 and 83-85 have amended as required by prior art. It is applicant's position that the claims have been drafted with the appropriate limitations to overcome Examiner's previous rejections and objections, and that they do not introduce new matter.

1. New matter

Applicant herein argues that all claims previously presented are fully supported by the original disclosure, as one of ordinary skill in the art would recognize. Although the moving and consuming of at least 60 inches of a corn plant stalk was not explicitly described in the original disclosure, that limitation was inherently disclosed in the original application.

Applicant disclosed the results of field tests using the Case/IH 800 and 1000 series corn heads in the original disclosure (paragraph 0030). Therein, Applicant disclosed "that when gathering chain paddle speed was reduced by twenty percent (20%) . . . the amount of measured MOTE (by weight) was reduced . . . ." *Id.* The Operator's Manual for the International 800 and 1000 series corn heads discloses the linear speed of the gathering chain at standard speed is 353 ft/min, the diameter of the stalk rolls is 3.75 in, the length of the stalk rolls is 22 in, and the rotational speed of the stalk rolls at standard speed is 1100 rpm (Exhibit A-1). The resulting linear speed of the stalk rolls may be calculated through elementary geometric relations at 1,080 ft/min. A 20% reduction in the speed of the gathering chain would result in a speed of 282.4 ft/min, or 56.5 in/s. At this speed, it would take one gathering chain paddle 0.390 seconds to travel the distance equal to 22 inches. However, because the dimension of 22 inches includes the portion of the stalk roll commonly referred to as the nose cone (or live action point in Exhibit A-1), the relevant distance is 17 inches, or the exposed fluted area of the stalk roll. One gathering chain paddle would travel 17 inches in

0.301 seconds. The linear speed of the stalk rolls is 216 inches/second, which enables the stalk rolls to consume 65 inches of corn plant stalk during the time it takes one gathering chain paddle to traverse the exposed fluted area. Using the same method of calculation, at standard speed, the stalk rolls would only consume 52 inches of corn plant stalk during the time it takes one gathering chain paddle to traverse the exposed fluted area. If the diameter of stalk roll in increased from 3.75 inches to 4.0 inches, as is known in the prior art, the quantity of corn stalk consumed is 55.4 inches.

These calculations may be performed using simple geometric relations in combination with the information located in Exhibit A-1, which is well known to those of ordinary skill in the art, and the disclosure in contained in Applicant's original application.

2. Previous claim objections/rejections

With the current amendments to the claims, the disclosure now enables one of ordinary skill in the art to make and use the invention since the disclosure identifies four distinct variables that may be manipulated and several methods by which those variables may be manipulated to achieve the result claimed in Claims 62 and 85. Furthermore, with the current amendments to the claims, the disclosure is now definite because the result claimed in Claims 62 and 85 is clearly defined, and the disclosure identifies four distinct variables relating to the structure of the invention that may be manipulated and also discloses several methods for manipulating those variables and structures to achieve the result claimed in Claims 62 and 85.

Applicant herein argues that U.S. Patent #4,227,366 issued to Pucher (hereinafter Pucher) as cited by Examiner does not anticipate Applicant's invention under 35 U.S.C. § 102. Pucher does not teach any method or apparatus pertaining to corn

harvesting machinery for reducing stalk shear, which is the problem Applicant solves. Pucher, as cited by the Examiner, does not anticipate Applicant's invention and instead demonstrates the inadequate operation of prior art corn head row units and corn heads as related to stalk shear.

Pucher states that what is considered to be inventive is "the improvement [disclosed] comprising: said at least one power input shaft [70] is positioned externally of said gear housing [also referred to as "box beam 50" in other portions of the specification], each said clutch means [80] being affixed to said at least one power input shaft [70] externally of said gear housing [50, see above], said power transfer means [85] being a detachable flexible member." (Col. 7 lines 25-31.) Therefore, the inventive elements and/or element configuration disclosed in Pucher are the position of a clutch means 80 affixed to a power input shaft 70, both mounted externally from a gear housing 50, wherein said power input shaft 70 transfers mechanical energy to the gearbox shaft 56 via a detachable flexible member 85 (a chain and sprocket mechanism as explained in col. 4 lines 23-25). This configuration dispenses with the need to remove the driveshaft from the gearbox and then remove the clutch from the driveshaft to service the clutch, a problem noted by Pucher at col. 1 lines 28-31. The design in Pucher also dispenses with the alignment and weight problems caused by using multiple, shorter drive shafts; problems noted by Pucher at col. 1 lines 39-41. None of the aspects of the design in Pucher are directed towards mitigating stalk shear. In fact, nowhere in the disclosure does Pucher address, attempt to solve, or suggest any possible solutions to the problem of stalk shear. On the contrary, as explained below, some aspects of the design in Pucher actually contribute to the problem of stalk shear.

Pucher does not discuss nor disclose any variance in gathering chain speed at a constant stalk roll speed (horizontal motion of the stalk with respect to the corn

head row unit and vertical motion of the stalk with respect to the corn head row unit, respectively), one of Applicant's disclosed solutions to the problem of stalk shear (pg. 2 paragraphs 24-29). Applicant discloses two methods for reducing gathering chain speed at a given stalk roll speed to substantially reduce stalk shear (which subsequently reduces material other than ears ("MOTE") accumulation on the crop header, reducing plugging of the crop header and increasing the efficiency of the crop header): (1) reducing the number of teeth (and hence reducing the diameter) of the gathering chain drive sprocket, thus reducing the linear velocity of the gathering chain drive sprocket at a given rotational velocity; and (2) changing the gearing on the internal gears of the gear box that drive the stalk engaging components (pp. 2-3, paragraphs 31-32). Applicant further discloses two methods for reducing stalk shear without changing the rotational relationship between the components driving the gathering chains and the stalk rolls: (1) lengthening the exposed fluted area of the stalk roll (this would allow the stalk roll more time to pull the cornstalk downwards before the stalk contacted the shear point); and (2) increasing the diameter of the stalk roll used to engage the stalk (this would translate into a higher linear velocity of the circumference of the stalk roll at a fixed rotational velocity or rpm)(pg. 3, paragraphs 33-34).

The relationship among Applicant's four methods is described in detail at page 2, paragraphs 23-28, after which Applicant notes, "[O]ne of the best ways to avoid corn stalk shear . . . is to install a smaller gathering chain sprocket in a row unit using a dependent drive system [because] [t]his slows down just the gathering chain or chains while allowing the rest of the corn head to operate at its normal operating speed." (pg. 2, paragraph 29). By slowing down the gathering chain speed with respect to other elements of the corn head, Applicant is able to increase the volume a given header may process by reducing MOTE, which is counter-intuitive since a common method for increasing throughput in a given

system is to increase the speed at which the elements within the system operate rather than decrease the speed of one element with respect to the other elements of the system. There is no suggestion, motivation, or teaching in Pucher or other prior art to incorporate or employ any of Applicant's four methods as cited above to reduce stalk shear because Pucher in no way mitigates or even attempts to mitigate the problem of stalk shear.

Applicant's design teaches away from shearing or cutting the stalk in order to reduce MOTE and achieve higher capacities and efficiencies for harvesting machines. In claims 77-79, Applicant claims and describes an improved arrangement of a corn head row unit wherein the row unit has a shear point 135 with a rounded edge to further mitigate the possibility of shearing the plant stalk. (See also Figures 7-10.) On the other hand, Pucher discloses a design wherein "a V-shaped cut-off 99 is positioned between the deck plates 96 adjacent the box beam 50 [to] provide a means for cutting the crop material." (Pucher, Col. 5, lines 21-25, emphasis added.) The purpose and teaching of Applicant's shear point 135 with a rounded edge is to avoid cutting or shearing the stalk, thereby minimizing what is known as "hair-pinning" of the stalks upon the deck plate. Applicant also teaches avoidance of cutting stalks to reduce material that plugs the row unit and to reduce MOTE transferred to the combine harvester. Pucher teaches a V-shaped cut-off 99 with the objective of increasing the ability to shear or cut off the stalk, thereby increasing potential for plugging of the row unit from crop material and MOTE. Thus, the design in Pucher (a V-shaped cut-off 99 to shear or cut the stalk) contributes to the problem Applicant's invention solves (minimization of stalk shearing, which leads to a reduction of MOTE transferred to the combine harvester), and therefore the disclosure in Pucher does not anticipate nor render obvious Applicant's invention.

CONCLUSION

In light of the above amendments and remarks, Applicant submits that the claims do not contain new matter and are in condition for allowance, and requests that the outstanding rejections and objections be withdrawn. If a telephone conference would expedite allowance of the claims, the examiner may wish to telephone Applicant's Attorney at (563) 441-0207.

Respectfully submitted,
MARION CALMER,

Date: March 13, 2008

By: _____
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SPECIFICATIONS

COMBINE REQUIRED

824	615-715
833	615-715
834	615-715
843	715-815-915
844	715-815-915
853	815-915
854	815-915
863	815-915
864	915
873	915
874	915
883	915

NUMBER OF ROWS

824	2 Row Wide
833	3 Row Narrow
834	3 Row Wide
843	4 Row Narrow
844	4 Row Wide
853	5 Row Narrow
854	5 Row Wide
863	6 Row Narrow
864	6 Row Wide
873	7 Row Narrow
874	7 Row Wide
883	8 Row Narrow

ROW WIDTH HANDLED

824	36, 38 or 40 inch
833	28 or 30 inch
834	36, 38 or 40 inch
843	28 or 30 inch
844	36, 38 or 40 inch
853	28 or 30 inch
854	36, 38 or 40 inch
863	28 or 30 inch
864	36, 38 or 40 inch
873	28 or 30 inch
874	36, 38 or 40 inch
883	28 or 30 inch

GATHERER CHAIN Flighted, endless, heavy duty roller chain (no connecting link.)

Speed 401 Standard — 353 F.P.M.
Slow Speed — 264 F.P.M.

Minimum distance between gatherer chain and ground 0

Gatherer chain adjustment spring loaded self adjusting.

STALK ROLLS

Spacing (Center to center row pair.) 3-3/4 inches

Length (including live action point.) 22 inches

Speed 1079.83 FPM
12.27mph Standard — 1100 R.P.M.
Slow speed — 822 R.P.M.

STALK ROLL STRIPPER SHIELD

Spacing control bolt adjusted

DIVIDERS

Floating type

Positioning control Spring, thread adjusted

Length 44.0

CROSS AUGER

Diameter 14 inch
Pitch 18 inch
Speed Standard — 174 R.P.M.
Slow speed — 130 R.P.M.

APPROXIMATE WEIGHT

824	1473 lbs.
833	1873 lbs.
834	1980 lbs.
843	2562 lbs.
844	2835 lbs.
853	3190 lbs.
854	3530 lbs.
863	3860 lbs.
864	4255 lbs.
873	4550 lbs.
874	4945 lbs.
883	5100 lbs.

EXHIBIT A-1